Manual for entering data to the nature index database

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Introduction

This manual is developed for experts and others (hereafter referred to as “users”) who are going to enter data for biodiversity indicators into the nature index database. The manual describes the structure of the web-interface for entering data, describes information that should be entered in the various input fields, and explains how to enter these data.

You will recognize chapter titles as elements found in the web-interface or as operations you are about to perform on the interface. You may therefore navigate to the appropriate chapter in this manual by clicking the relevant title in the content list above. The manual further contains a number of helpful internal and external links.

Software platform

Server side:

The servers for the Nature Index run on Microsoft software.
The database server is a Microsoft SQL Server 2012 running on a Windows Server 2008 platform.
The web server is a Microsoft Internet Information Server running on a Windows Server 2012 platform. The programming language used on the server side is C#.

Client (users) side:

The nature index webpages use a combination of CSS, JavaScript and HTML5. They are tested on Google Chrome and Microsoft Internet Explorer – latest versions. Other modern HTML5 browsers (such as Opera and Firefox) will probably work just fine. JavaScript must be turned ON in the browsers security settings.

Those with web-browsers older than Internet Explorer 9, or similar, are encouraged to upgrade their browsers before trying to access the Nature Index.

Access

The web-interface for entering data is accessed on the following address:

http://naturindeks.nina.no/

The database will be open for data entry from users once a year. The period is announced directly to the users. Current access-status is displayed on the **Home** page.

To log in and get access to the database you need to be registered as a user with a username and password. If you are a new user wishing to contribute, please contact the Nature index core team. Our policy is to only allow clearly recognized experts to document the Nature index database.

Users are responsible for a defined set of indicators, for which they get access to read and enter data. Thus, read and write access to indicator data is user-specific. Users wishing to expand or restrict the set of accessible indicators for their profile should contact one of the system administrators.

Interface structure

The interface consists of six pages that may be accessed by the user,

- the **Home** (or front) page which the user will first encounter,
- the **Log in** page for getting access to the database,
- the **Indicators** page for choosing an indicator to work with and entering indicator information,
- the **Areas** page for defining/editing indicator specific geographical units,
- the **Values** page for entering/editing reference values and unscaled observations of the indicator in these geographical units,
- the **User** page for entering/editing user information.

How to proceed – in brief

After you have logged in you are required to choose one of the indicators assigned to you on the **Indicators** page, and fill in missing metadata for it. You may also update or correct metadata entered earlier on this page.

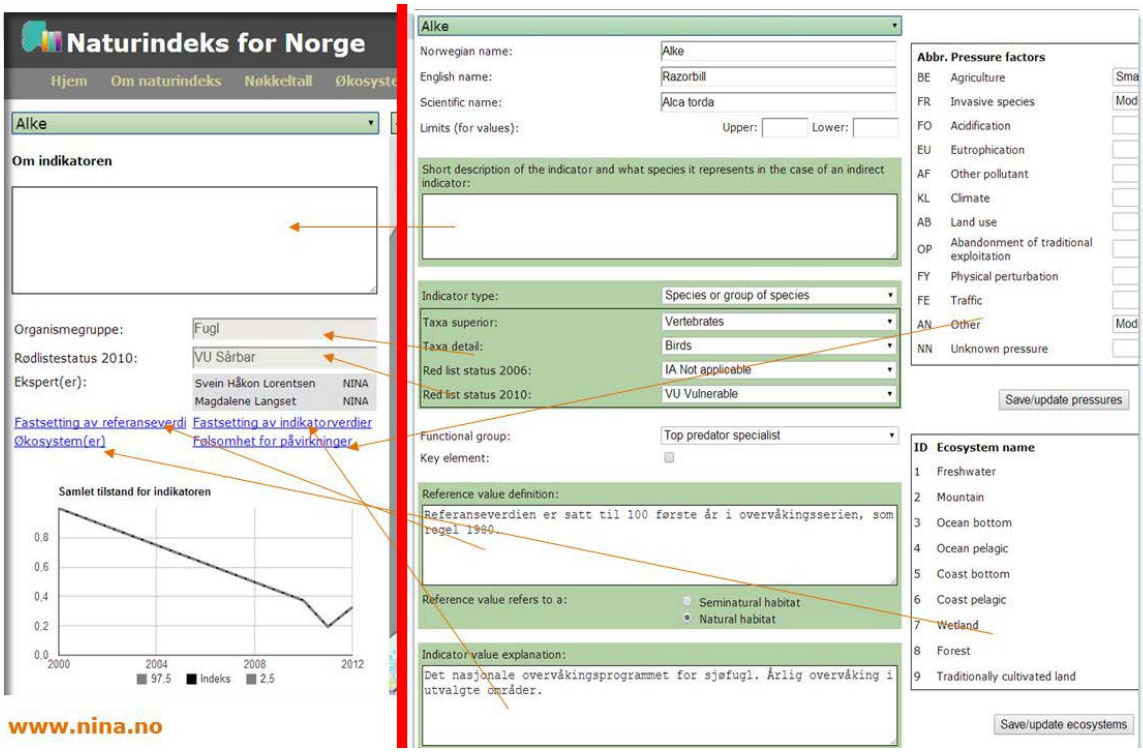
Then, optionally if not already done or if you want to revise old delineations, navigate to the **Areas** page to document the area where the indicator is relevant (the definition area), and delineate geographical units (hereafter simply referred to as areas) within the definition area for which you will enter values for this indicator. You have to define at least one such area.

Values for each of the indicators' areas are entered on the **Values** page. These values can either be observations, measurements, model output through e.g. interpolation or extrapolation, or expert opinion. Optionally, data may be entered via Microsoft Excel. The Values page includes a tool for both creating appropriate Excel work-sheets as well as for importing data from the same work-sheets to the database. The Values page also has a visualization tool to help proofreading the entered data.

Public access to nature index data

Norwegian Environment Agency is preparing a new web-site, here referred to as naturindeks.no, that will present the Nature Index methodology and results. In addition it will provide insight into the quality and amount of data the index is based on. The new web-page is intended for the public. It will directly display some of the information that users enter into the nature index database (see illustration below). Information displayed includes the indicator's name, its description, descriptions of the data set and how reference values are determined, pressure factors, ecosystem affiliations and area names. In addition, links and documents uploaded in the Documentation pop up window will be made available to the public on naturindeks.no. It is therefore important that the various descriptions of indicators, reference values and data are formulated in a popular and easily accessible style. The data themselves (values and reference values) will not be displayed.

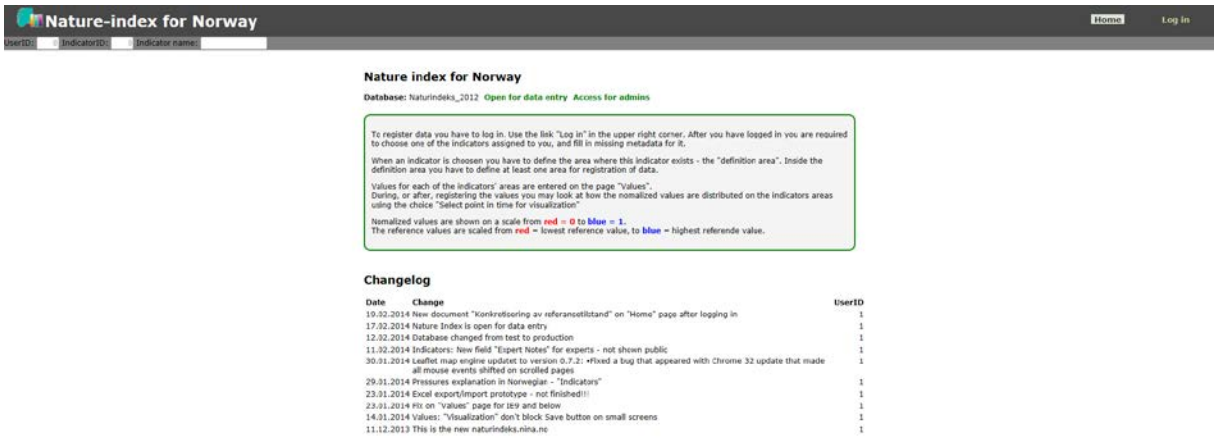
A prototype is already available on the net. You may consult the prototype in order to review how your input in these fields will be displayed on naturindeks.no. Note however that a large part of the information displayed by the prototype is from a test database that contains some junk data as well as invented data.



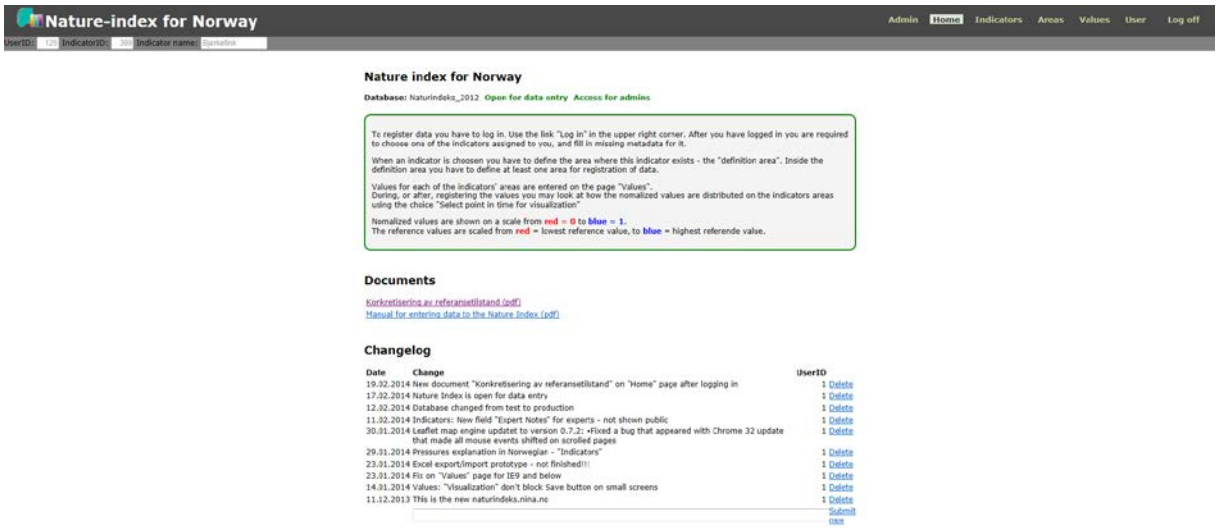
Getting started – the Home, Log in and User pages.

Home page

The **Home** page displays current status of the database and current accessibility. It further contains a brief instruction on how to proceed in order to get access to indicators and enter new data to the database. There is also a log containing information about the most recent updates of the web-page.


Nature-index for Norway
Home
Log in
Nature index for Norway
Database: Naturindeks_2012 Open for data entry Access for admins
To register data you have to log in. Use the link "Log in" in the upper right corner. After you have logged in you are required to choose one of the indicators assigned to you, and fill in missing metadata for it.
When an indicator is choosen you have to define the area where this indicator exists - the "definition area". Inside the definition area you have to define at least one area for registration of data.
Values for each of the indicators' areas are entered on the page "Values".
During, or after, registering the values you may look at how the nomalized values are distributed on the indicators areas using the choice "Select point in time for visualization"
Nomalized values are shown on a scale from red = 0 to blue = 1.
The reference values are scaled from red = lowest reference value, to blue = highest referende value.
Changelog
Date Change UserID
19.02.2014 New document "Konkretisering av referansetilstand" on "Home" page after logging in 1
17.02.2014 Nature Index is open for data entry 1
12.02.2014 Database changed from test to production 1
11.02.2014 Indicators: New field "Expert Notes" for experts - not shown public 1
30.01.2014 Leaflet map engine updatet to version 0.7.2: •Fixed a bug that appeared with Chrome 32 update that made all mouse events shifted on scrolled pages 1
29.01.2014 Pressures explanation in Norwegian - "Indicators" 1
23.01.2014 Excel export/import prototype - not finished!!! 1
23.01.2014 Fix on "Values" page for IE9 and below 1
14.01.2014 Values: "Visualization" don't block Save button on small screens 1
11.12.2013 This is the new naturindeks.nina.no 1

Click the **Log in** tab at the end of the top menu to enter the **Log-in** page. After log-in this user manual and other supporting documents are available on the **Home** page.


Nature-index for Norway
Admin
Home
Indicators
Areas
Values
User
Log off
Nature index for Norway
Database: Naturindeks_2012 Open for data entry Access for admins
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Documents
Konkretisering av referansetilstand (pdf)
Manual for entering data to the Nature Index (pdf)
Changelog
Date Change UserID
19.02.2014 New document "Konkretisering av referansetilstand" on "Home" page after logging in 1 Delete
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14.01.2014 Values: "Visualization" don't block Save button on small screens 1 Delete
11.12.2013 This is the new naturindeks.nina.no 1 Delete
Submit
User

Log in page

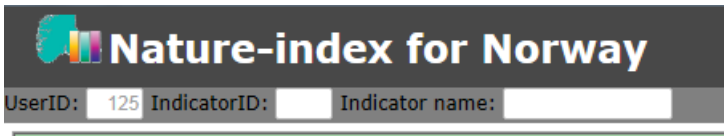
Contain fields for entering necessary log-in information (User Name and Password) to get access to the database, and a link for receiving the current personal password by mail in case one does not remember the password.

User Name is the e-mail address that has been entered under User information on the User page.

Click the Log In button in the middle of the page after entering log-in information. Then you will automatically enter the **Indicators** page and also get access to the **User** page.

Click the Forgotten password? link and follow instructions in case you have forgotten your password and need to access the database.

After you have logged in your user ID is displayed to the left under the top menu.



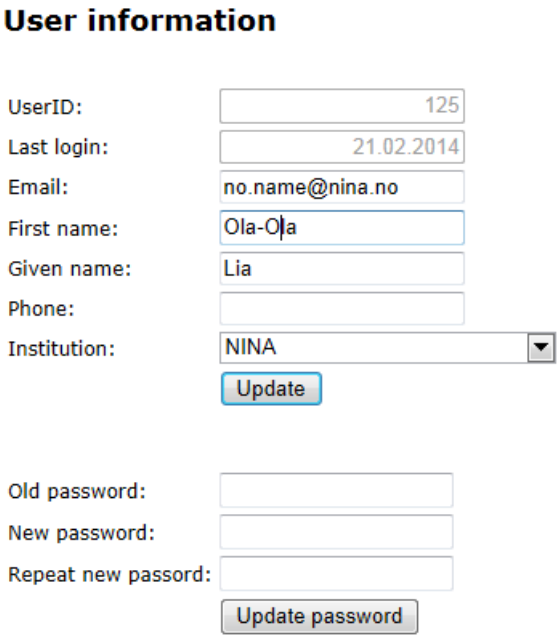
User page

Click the **User** tab when logged in, in order to enter this page

The page displays basic user information (Internal user ID and date for last login) and contains fields for entering/revising your user information (name, phone, institution, e-mail) and for changing the password.

Click the Update button after you have entered new or revised user information in order to store this information in the database. Old information will be deleted from the database. If you forget to click the button the new information will not be stored, while the old information remains and will be displayed next time you enter this page.

Click the Update password button after you have entered both old and new passwords as well as repeated the new one, in order to store the new password in the database. If you forget to click the button, the new password will not be stored while the old one remains valid.

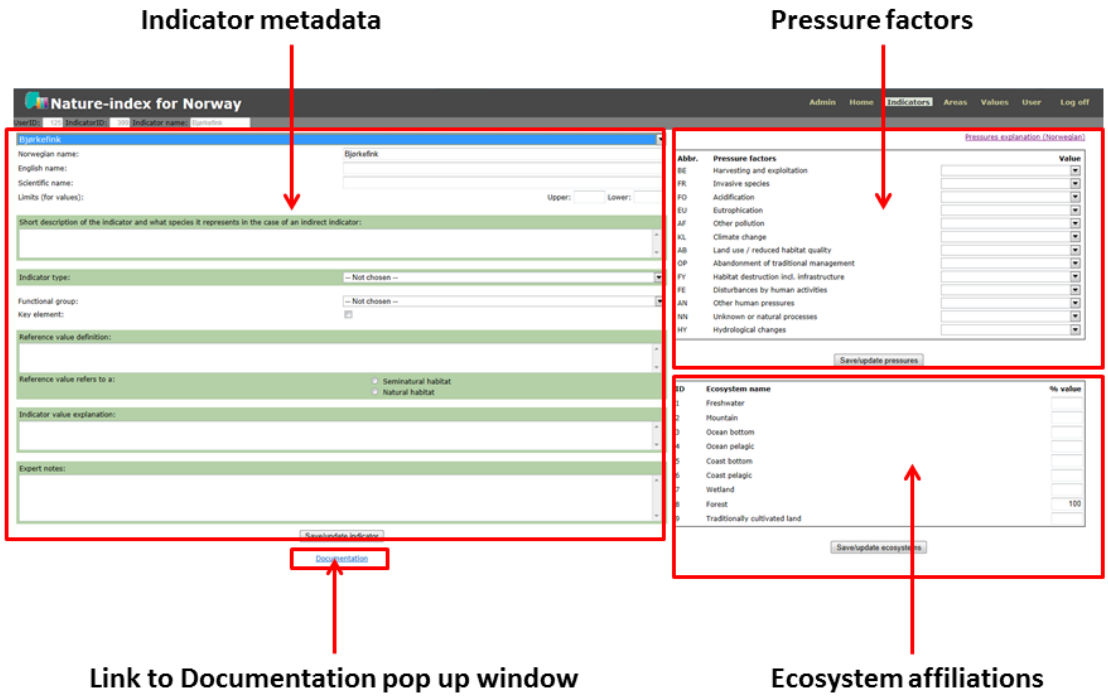


Indicators page

Nature-index for Norway
Admin
Home
Indicators
User
Log off
-- Choose your indicator --
These are your indicators.
Choose the indicator you are going to work with.
You may choose to set upper/lower limits for the indicators possible value. If you choose to do so, the limits will be used for validating the values you enter on the "Values" page.

Choose one of the indicators assigned to you from the drop-down list. This will give you access to the various fields for entering indicator information as well as the **Areas** and **Values** pages for the chosen indicator.

The page contains fields for entering Indicator metadata, sensitivity to Pressure factors, and Ecosystem affiliation. There is also a link to a popup window for uploading or linking to documentation in electronic form, i.e. reports, pictures, web-pages etc.



Indicator metadata

New or edited data and choices from drop-down menus are not automatically stored in the nature index database. In order to store new or edited input, click the Save/update indicator button

Norwegian name

Enter / edit the indicator's Norwegian name.

The content of this field will appear on naturindeks.no.

For indicators that represent species or other formal taxa such as genera, use approved Norwegian names as found in the Species Names Database at the Norwegian Biodiversity Information Centre.

For other indicators, give descriptive and popularized indicator names which are understandable to the public.

Capitalize first letter in the name. Remove any underscore-signs etc. that may appear in the name. Use Norwegian letters æ, ø, å, not adaptions to alphabets without these letters like ae, eu, aa.

English name

Enter / edit the indicator's English name.

For indicators that represent species or other formal taxa such as genera, use common English names as they appear in the Pan-European Species directories Infrastructure EU Nomen.

Capitalize first letter in the name. Remove any underscore-signs etc. that may appear in the name.

Scientific name

Enter /edit the indicator's scientific name.

For indicators that represent species or other formal taxa, enter current scientific name. For other indicators no input should be entered.

Limits (for values)

(Optional)

Enter upper and lower limits for values the indicator may take (before scaling against the reference value) in case you want an automatic check against typing errors that result in unrealistic values, when you enter data on the **Values** page.

If you enter such limits, you will not be able to store values entered on the **Values** page that are outside the interval given by lower and upper. Instead a warning message will be displayed.

Short description of the indicator and what species it represents in the case of an indirect indicator

The content of this field will appear on naturindeks.no.

Give a popular description (**in Norwegian**) of the indicator that introduces the indicator for the public.

For species indicators this could for example be a very brief account of the species ecology and distribution, recent changes in abundance, distribution, or population dynamical patterns, the possible causes for such changes, and/or pressures, management strategies / policies affecting this species if relevant.

For indirect indicators one should include at least a description of how the indicator is constructed, what sorts of organisms are involved, and/or what the indicator expresses.

Examples (The "Lirype" example is maybe too long, however, it is written in the intended style and includes the information asked for):

Lirype

Lirype er en karakterart i våre fjellområder. Sammen med sin nære slektning fjellrypa tilhører den skogshønsfamilen. Her finner vi også kjente arter som storfugl, orrfugl og jerpe. Lirypa er vårt fremste folkevilt og hver høst drar 50-90 000 nordmenn til fjells på rypejakt. Ikke bare vi mennesker setter pris på lirype som mat. Men også for arter som kongeørn og jaktfalk er li- og fjellrype av stor betydning, spesielt for en vellykket reproduksjon. Lirypa finnes i tilknytning til fjellbjørkeskogen og vierbeltet over hele landet. Den finnes også på større og mindre øyer langs kysten fra Midt-Norge og nordover. I likhet med de andre artene i skogshønsfamilien har rypene et stort reproduksjonspotensial; de legger mange egg og kan få fram mange kyllinger. Bestanden kan derfor i løpet av et par vellykkede sesonger med stor kyllingproduksjon øke betraktelig i størrelse. Men fordi det også er stor naturlig dødelighet i en rypebestand kan bestandene avta strekt mellom år hvis produksjonen slår feil.

Fram til midt på 1980-tallet varierte rypebestandens størrelse med topp i bestanden hvert 3-4 år. Dette var hovedsakelig forårsaket av tilsvarende svingninger i smågnagerbestandene. En oppgang i smågnagerbestandene førte til redusert dødelighet forårsaket av småroVvilt som f.eks. rødrev, røyskatt og mår for ryper og rypebestanden økte. Når bestanden av smågnagere avtok, økte presset på ryper fra småroVvilt og rypebestanden avtok. Etter at disse regulære svingningene i smågnagerbestandene har uteblitt i større eller mindre grad har også oppgangsårene for rype i stor grad uteblitt. Dette, samt mange andre negative faktorer har i sum ført til at rypebestanden har avtatt sterkt de siste 20 åra. Som et resultat av dette er det i dag innført en rekke forskjellige restriksjoner på utøvelse av rypejakt.

Palsmyr (indirekte indikator):

Palser er torvhauger med en kjerne av is som ikke smelter helt ut. En palsmyr er en myr med veksling mellom palser og flate myrpartier. Den regnes som en truet naturtype, pga. omfattende nedsmelting i løpet av de siste 100 år. Årsakene til nedsmelting er trolig økte nedbørsmengder om sommeren, økte snødybder om vinteren (som isolerer og ikke slipper til kald luft), stedvis økte sommer- og vintertemperaturer, men også erosjon av eldre palser som er en normal utvikling. Det antas at flere

kontinentale myrarter er påvirket av de samme påvirkningsfaktorene som palsmyrer er, og derfor viser tilsvarende trend som palsmyr. Eksempler på arter med potensielt samme trend som palsmyrer er lapptorvmose, lappstarr og lappmjølke. Dette er arter som ofte er observert ved palser. Indikatoren gir derfor et uttrykk for utviklingstrender for velutviklede myrer i områder med sterk vinterkulde og arter som er sterkt knyttet til denne type myr under endrede klimaforhold.

Smyle (indirect indicator):

Smyle er et smalbladet gras som er vanlig i hele Norge i mange ulike skogtyper og i andre typer natur. Arten begunstiges av god nitrogentilgang. Økte avsetninger av langtransportert nitrogen har blitt framsatt som en mulig forklaring på at smyle har økt i mengde i sørnorske og i sørsvenske skoger. Økning i smyledekning fører imidlertid gjerne til redusert plantemangfold, da andre arter blir skygget ut eller fysisk hindret i etablering og overlevelse. Det er denne negative effekten på biologisk mangfold som representeres her.

Indicator type

Choose correct indicator type from the drop-down menu.

Species or group of species
Indirect indicator

For indicators that represent the condition of single species, other formal taxa such as genera, or informal groups of species of the same type (e.g. rodents) choose Species or group of species. For all other indicators choose Indirect indicator.

Indirect indicators are typically community indices, surrogates like the MIS indicators standing and lying dead wood, and indicators based on habitat types.

Note that in cases where the indicator represents the negative effect of one species upon other types of organisms (e.g. through predation or competition), the indicators are considered to be Indirect indicators.

Note also that the Max scaling model (see below) is only relevant for Indirect indicators.

Type of organism (informal grouping)

(Only for Species or group of species indicators)

Choose correct type from the drop-down menu (see table). Note that these types do not conform to modern, formal taxa.

Type of organism (informal subgrouping)

(Only for Species or group of species indicators)

Choose correct type from the drop-down menu (see table). As above, some of these types do not conform to modern, formal taxa.

Types	
Group	Subgroup
Plant or algae	Algae Liverwort Moss Fern Seed plant
Fungus	Ascomycete Basidiomycete Lichen
Invertebrate	Cnidarian Crustacean Echinoderm Insect Mollusk Spider Sponge Other
Vertebrate	Amphibian Bird Bony fish Cartilaginous fish Mammal Reptile
Not relevant	Not relevant

Red list status 2006

(Only for Species or group of species indicators)

Choose correct status, as given in the Norwegian Red list from 2006, from the drop-down menu. Choose among the alternatives

CR Critically endangered
EN Endangered
VU Vulnerable
NT Near Threatened
LC Least Concern
DD Data Missing
NE Not Estimated
NA Not Relevant
IA Not applicable.

Choose IA Not applicable, which is not a formal red list category, for indicators that are not included / categorized in the 2006 red list, e.g. for indicators that represent groups of species.

Red list status 2010

(Only for Species or group of species indicators)

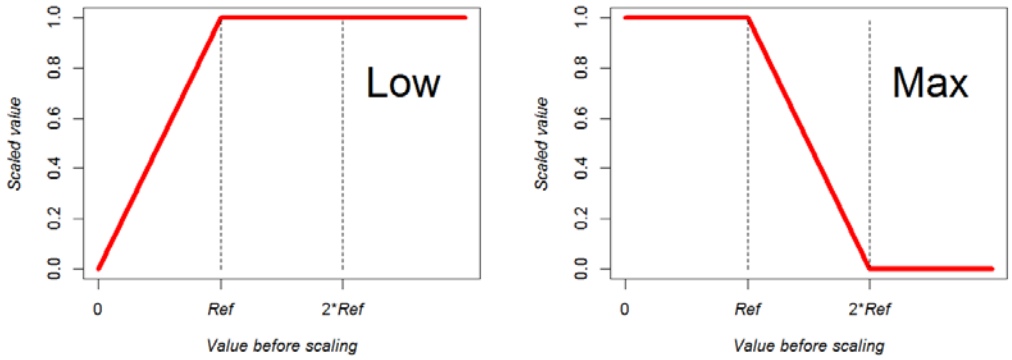
Choose correct status, as given in the Norwegian Red list from 2010, from the drop-down menu.

Choose IA Not applicable, which is not a formal red list category, for indicators that are not included / categorized in the 2010 red list, e.g. for indicators that represent groups of species.

Scaling model

(Only for Indirect indicators)

Choose correct scaling model for the indirect indicator from the drop-down menu.



The nature index framework includes two scaling functions: Low and Max. Choose the Low model when there is a positive relationship between the indirect indicator and the state of biodiversity. Choose the Max model when the relationship is negative.

Explanation:

The Nature Index is calculated as a weighted average of scaled indicator observations. However, observations are recorded in the NI-database according to their appropriate, indicator specific scales. Thus, when calculating the nature index, observations must be transformed to a common scale before averaging. Both scaling functions transform indicator observations (values) to a scale ranging from 0 to 1 for all indicators.

Both types of scaling function contain one parameter, the reference value (*Ref*). Reference values are entered to the database on the **Values** page.

Species indicators are scaled by the Low model only.

Functional group

Choose the functional group that best characterizes the indicator from the alternatives in the drop-down menu.

Top predator generalist
Top predator specialist
Intermediate predator generalist
Intermediate predator specialist
Herbivore / Filter feeder
Primary producer generalist
Primary producer specialist
Detritivore / Decomposer
Not relevant

For indirect indicators that summarize the state of both specialists and generalists within the same trophic level, choose the "generalist" alternative for the trophic level in question.

Indirect indicators that summarize the state of organisms belonging to several trophic levels should be classified as key elements (see below). For such indicators choose Not relevant from the drop-down menu.

Explanation:

When the nature index is calculated as a weighted average, weights are assigned to observations according to the functional group indicators belong to, so that all functional groups documented in a municipality are given equal weight in the calculation. In effect, indicator observations belonging to a functional group with many indicators are down-weighted compared to those from a group with few indicators in the municipality.

Key element

This field cannot be edited by the user.

Explanation:

The criteria for regarding an indicator as a key element are: i) the indicator has statistical significance for populations of many other species, ii) it occurs over a large area, and iii) at the same time, there is good data for it. Key elements are given extra weights in the calculation of the nature index. Key elements are in total assigned 50% weight within municipalities where they are present.

The classification of indicators into key- or non-key elements is part of the ecological framework for the nature index and is not determined by the individual expert.

Key elements are sometimes referred to as "extra-representative" indicators.

Reference value definition

The content of this field will appear on naturindeks.no.

Give a popular description (**in Norwegian**) of how reference values for this indicator are determined.

Examples:

Fjellrev

Referanseverdiene for fjellrev er beregnet ut i fra kunnskap om territoriestørrelsen til denne arten. Fjellreven er sosial. Hun og han forsvarer et felles territorium, og regnes derfor som en enhet i beregningen av referanseverdien. Territoriestørrelsen varierer markant med produktivitet og tilgang til byttedyr. Der det er stabil tilgang på byttedyr, som i et fuglefjell, kan territoriet være under 10 km2. I høyfjellet er tilbudet av byttedyr atskillig mer marginalt og ustabilt mellom år. Det er dokumentert territorier på 50-100 km2. I beregningen av referanseverdien bruker vi kommunenes arealstatistikk, men tar hensyn til at territoriestørrelsen øker med høyde over havet pga. minkende tilgang på byttedyr.

Rådyr

Referanseverdiene for rådyr beskriver en tenkt tilstand der rådyret har fått anledning til å kolonisere hele landet, jakt er fraværende, klimaet er som det var inntil nylig (1960-1990), skogbruk er av liten betydning for beiteproduksjon, og antallet rovdyr er begrenset av andre faktorer enn jakt (hovedsakelig begrenset av tilgangen på byttedyr). Høyt predasjonstrykk fra ulv, bjørn og gaupe i kombinasjon med strenge vintre, vil da medføre at rådyret er fraværende eller opptrer ved svært lave tettheter i snørike deler av landet, mens kystnære lavlandsområder, og særlig rovdyrfrie øyer, kan ha relativt høye tettheter av rådyr.

Smågnagere fjell

Referansetilstanden bygger på forestillingen om at et økosystem styrt av naturlige prosesser i et klima med minimal menneskelig påvirkning, skaper et mønster i smågnagerbestandenes dynamikk karakterisert ved regelmessige bestandstopper som er ca 5-10 ganger høyere enn bestandsnivået i år med lav bestand. Dette gjelder spesielt i nordlige økosystemer (fjell, boreal skog) med regelmessig snødekke av flere måneders varighet. I praksis er referansetilstanden en ekspertvurdering basert på antagelsen om at smågnagerdynamikken i perioden ca 1950-1980 var tilnærmet naturlig, siden observasjoner av smågnageres bestandsvariasjon fra denne perioden viser omtrent samme mønster som for naturlig bestandsdynamikk. Slik sett er referansetilstanden generelt lik tilstanden i 1950.

Reference value refers to a

Choose either Seminatural habitat or Natural habitat.

The NI framework in Norway considers 9 “major ecosystems”: coast benthic, coast pelagic, forest, freshwater, mountain, ocean benthic, ocean pelagic, traditionally cultivated land (= open lowland), and wetlands. So far only indicators for “traditionally cultivated land” uses a semi-natural state as reference (see section “Spesielle forhold knyttet naturmark versus kulturmark” in linked document).

Indicator value explanation

The content of this field will appear on naturindeks.no.

Give a popular description (**in Norwegian**) of the data for this indicator. That is, what are the data sources, is the indicator part of a monitoring program, what is measured etc. Also describe the geographical resolution of the data entered into the NI database.

Examples

Smyle:

Datagrunnlaget er hentet fra seks overvåkingsområder i fjellbjørkeskog i det statlige overvåkingsprogrammet TOV (Program for terrestrisk naturovervåking). Områdene er lokalisert i Lund i Rogaland, Møsvatn i Telemark, Gutulia i Hedmark, Åmotsdalen i Sør-Trøndelag, Børgefjell i Nord-Trøndelag og Dividalen i Troms. Dataene gjenspeiler endringer i dekning av arten, basert på gjenanalyser av 50 stk. 1m^2 ruter innen hvert område hvert femte år, fra overvåkingsområdene ble etablert og frem til siste gjenanalyse.

Lirype

For å beregne rypebestandens størrelse har vi benyttet jaktstatistikk fra Statistisk sentralbyrå for lirype fra 1971/72 til d.d. I årene fram til 1990 har vi sagt at det var 10% avskyting av høstbestanden. På grunn av økt jaktpress og ny kunnskap har vi etter 1990 beregnet bestanden på grunnlag av 15% uttak for lirype. Men disse antagelsene er forbundet med usikkerhet. Vi har anslått at det korrekte uttaket fram til 1990 var mellom 5% og 15% av høstbestanden med 50% sannsynlighet. Tilsvarende grenser etter 1990 var hhv 10% og 20%.

Fordi bestandene av skogshøns kan variere svært mye fra år til år, har vi ikke benyttet jaktstatistikk kun for det enkelte år 1990, 2000 og 2010. Som beregningsgrunnlag for 1990 har vi benyttet gjennomsnittet for jaktsesongene 1989/90-1991/92. Tilsvarende har vi brukt gjennomsnittet for jaktsesongene og 1999/00-2001/02 og 2009/10-2011/2012 for å beregne bestandene i hhv 2000 og 2010. Alle data er oppgitt på fylkesnivå.

Fjellrev

For beregning av indikatoren har vi for 1950 bare kunnet angi antall fjellrevpar gjennom en konsekvent ekspertvurdering. Denne vurderingen ble basert på potensialet for fjellrev i de ulike kommunene og vår kunnskap om dagens forekomst sett i relasjon til historiske kilder. Trolig er anslaget på 97 fjellrevpar i 1950 litt for høyt.

For 1990, 2000, 2010 er indikatoren basert på faktiske tall fra overvåkingsprogrammet på fjellrev. Data er hentet fra Rovbasen (www.rovbase.no). Ettersom antall ynglinger stort sett alltid er null de årene det er lite smågnagere, har vi valgt å legge inn antall fjellrevynglinger i det nærmeste toppåret som er registrert for kommunen innenfor tiåret (1981-1990, 1991-2000, 2001-2010). Nullestimater angitt etter dette tidspunktet betraktes derfor som reelle data og ikke bare som ekspertvurdering. Nasjonalt overvåkingsprogram for fjellrev er finansiert av Direktoratet for naturforvaltning og rapporteres i Rovbasen (årlige rapporter foreligger fra og med 2003).

Expert notes

(Optional)

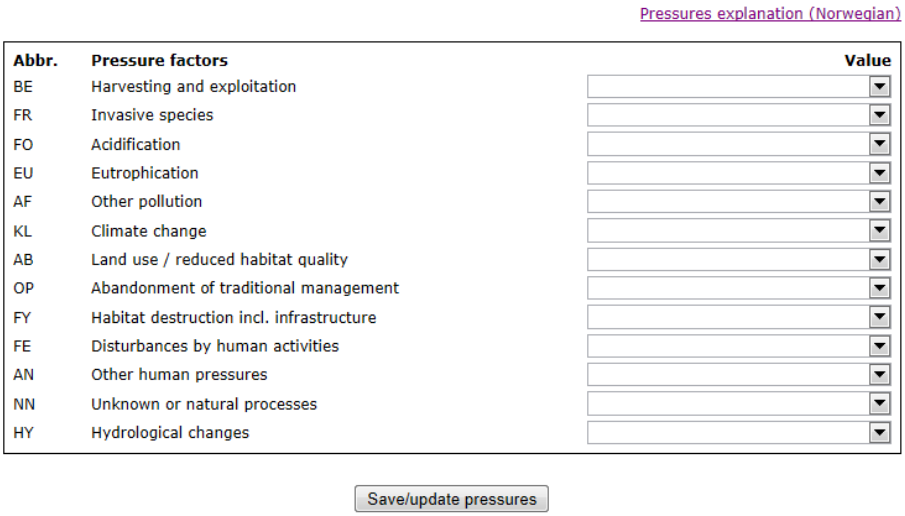
The content of this text field can only be read by users with access to the indicator. Here you may enter and store information about the indicator for your own convenience, i.e. description of methods to generate reference values, observations etc. which might be consulted later.

Save/update indicator

New or edited indicator metadata and choices from drop-down menus are not automatically stored in the nature index database. In order to store new or edited input, click the Save/update indicator button. If you forget to click the button your input will be lost when you leave the **Indicators** page.

Pressure factors

A table of pressure factors appears in the upper right corner of the **Indicators** page.



The list is a simplified version of the Norwegian standard for pressure factors NS 9452:2012 Collection of environmental data - Influencing factors on Norwegian natural diversity and cultural environment developed by Standard Norway. Above the table is a link Pressures explanation (Norwegian) to a document in Norwegian which explains the different categories included here.

In the table there is a drop down list for each factor containing alternatives for describing the magnitude of the negative effect of the pressure factor on the indicator.

Very small
Small
Moderate
Strong
Very Strong
Not relevant/unknown

In the table choose up to the three most influential factors potentially affecting the indicator in the given ecosystem(s) in a negative way in Norway. The magnitude of the effect of a pressure factor may vary across the country or the ocean, but here indicate pressure factors that have a certain geographical range of influence (e.g. not affecting only a small part of a municipality or a fjord).

For each of these factors characterize the effect by choosing the appropriate category from the drop-down list. For the remaining pressure factors choose the Not relevant/unknown alternative.

Save/update pressures

Your choices from the drop-down lists for pressure factors are not automatically stored in the nature index database. In order to store new input, click Save/update pressures.

Ecosystem affiliation

ID	Ecosystem name	% value
1	Freshwater	
2	Mountain	
3	Ocean bottom	
4	Ocean pelagic	
5	Coast bottom	
6	Coast pelagic	
7	Wetland	
8	Forest	100
9	Traditionally cultivated land	

Save/update ecosystems

The NI framework in Norway considers 9 “major ecosystems”: coast benthic, coast pelagic, forest, freshwater, mountain, ocean benthic, ocean pelagic, traditionally cultivated land (= open lowland), and wetlands. Data collected for each indicator provide information on one or several of these major ecosystems, in different proportions. For example data collected for the Willow ptarmigan are affected by the conditions in both forest- and mountain ecosystems.

The Ecosystem affiliation field is used to document these proportions, using percentages between 0 and 100. For example, an indicator such as benthic macro-fauna which depends exclusively on Freshwater gets a basic weight of 100 in Freshwater and 0 in the other major ecosystems. On the other hand, the Willow ptarmigan, which exploits low alpine habitats more than forest gets a weight of 70 in mountain and 30 in forest.

Note, what is relevant to consider here is how the major ecosystems state are reflected in the data collected for the indicator. For example, in cases where the data collected are affected by the state of only one major ecosystem, say data for a plant species collected in forests, even though the indicator occurs in several other systems, say mountain and cultivated land, Forest should be given the basic weight of 100.

These numbers are relative estimates, and it is up to each expert to define them for their indicators. Their sum must always equate 100.

Indicators are weighted according to these proportions in the calculation of the Nature Index for a major ecosystem.

Save/update ecosystems

New or edited ecosystem affiliations are not automatically stored in the nature index database. In order to store new input, click Save/update ecosystems.

Documentation pop up window

Click the Documentation link on the **Indicators** page to enter the **Documentation** pop-up window.

Documentation

There you may either establish links to documentation for your indicator that is public and accessible on the web, or upload such documentation into the database. Such documentation includes scientific publications and reports, illustrative and nice pictures, and popular descriptions of species.

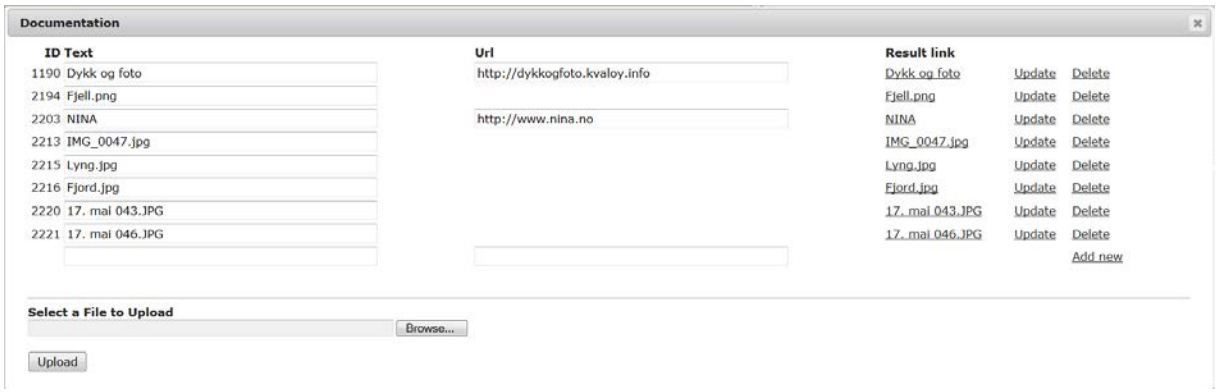
On this page you may also remove uploaded documents, and you may edit or remove established links.

Note that uploaded and linked documentation will be made accessible for the public on naturindeks.no.

If a good illustration photo of the indicator exists – please upload for use on naturindeks.no

The pop-up window contains a table over linked and uploaded documents for the current indicator, where the last row is for entering a new link or document.

It also contain a field for entering the path and name of a file to be uploaded together with a Browse button / function for finding the file in question and automatic input of path and file-name, and an Upload button for uploading the file to the database.



The table has six columns; ID, Text, Url and Result link, as well as two columns with Update and Delete buttons for all documents and links. Last row contain an Add new button only. The ID is automatically allocated to the document by the database system. Result link is also automatically generated. It contains the actual link and shows how the link to the web page or uploaded document will appear on naturindeks.no.

Upload a new document/file

Click the Browse button which gives you access to the folders on your computer.

Find and open the file in question.

Click the Upload button to upload the file.

The last row of the table will then be updated with a new, unique ID for the document, an empty Url and the resulting link. You may test the link by clicking it. In addition a new empty last row will be generated in the table for uploading additional documents or creating new links to web-pages.

Edit the text for an uploaded document/file

Find the row in the table with the document in question.

Enter new text in the document's Text field.

Click the Update button in the same row.

This will cause the document's Result link to be updated without changing the document ID.

Establish a link to a web page

Enter web page title, name, or text that describes the content of the page in the empty Text field in the last row of the document table.

Enter correct address to the web page in the empty Url field in the same row.

Click the Add new button in the same row.

The row will then be updated with a new, unique ID for the link and the resulting link. You may test the link by clicking it. In addition a new empty last row will be generated in the table for uploading a new document or creating additional links to web-pages.

Edit the link to a web page

Find the row in the table with the link in question.

Enter new text in the Text field and/or enter new address in the Url field.

Click the Update button in the same row.

This will cause the document's Result link to be updated without changing the ID.

Remove an uploaded document/file from the database

Find the row in the table with the document in question.

Click the Delete button in the same row.

This will remove the row from the table and remove the file from the database.

Remove a link from the database

Find the row in the table with the link in question.

Click the Delete button in the same row.

This will remove the row from the table and remove the link from the database.

Areas page

On the **Areas** page you delineate the spatial units (here called areas) from where indicator data is collected.

When a new indicator is included in the nature index database, this page must be visited before entering information. It can also be visited later-on, to update areas for existing indicators, for example if knowledge becomes available in new areas.

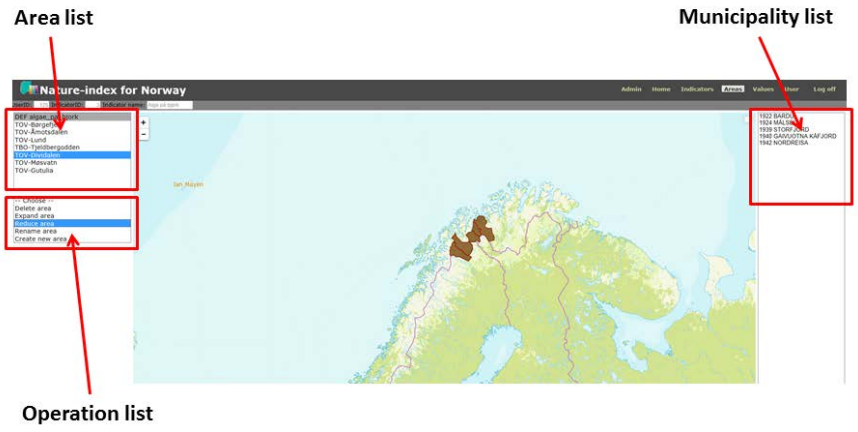
Two kinds of geographical units are defined in the **Areas** page: the definition area, and the areas with data. The definition area is the total geographical range where the indicator is relevant. Within the definition area, one or several areas can be delineated. Each such area is a single statistical unit, in which you can enter values for the indicator. The areas correspond to the spatial scale at which information is entered in the database. Definition areas and areas are indicator specific and must be delineated for each indicator separately, even for indicators observed in identical sets of spatial units. The finest achievable spatial scale for entering information is the municipality for terrestrial and coastal regions, and specifically designed regions for the oceans (Skagerak, Nordsjøen, Norskehavet, Barentshavet). They constitute the basic elements of the definition area and areas.

Access

To access the page choose one of your indicators on the **Indicator** page. Then click the **Areas** tab.

Content

The content of the **Areas** page will differ whether some spatial units are already defined for your indicator or not and depending on the operation you perform. Normally it contains two drop-down lists on the left, an area list and a list of possible operations – the operation list. The central part shows a map which, depending on context, displays delineated areas and/or municipalities/oceanic regions available to be included in a (new) spatial unit. On the right is a list of available municipalities/oceanic regions - the municipality list. When you enter the page the map will show the indicator's Definition area, while the municipality list is empty.



Selecting municipalities / oceans from the map

Areas may be delineated by selecting municipalities and/or oceanic regions from the map. You do this by sequentially clicking on municipalities to be included in the area. The name of the municipality under the pointer will appear in the upper right corner of the map. The name is constantly updated as you move the pointer.

Scroll the mouse wheel or click the buttons in the upper left corner to zoom in and out of the map. Press the left mouse button and drag the map in order to navigate in different map sections.

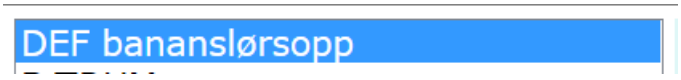
Selecting municipalities / oceans from the municipality list

Alternatively, areas can be delineated by selecting municipalities and/or oceanic regions from the municipality list. You do this by sequentially clicking the names of the municipalities to be included in the area while pressing the Ctrl-key. Press the Shift-key if you want to select municipalities that are listed sequentially.

Definition area

In order to start defining spatial units for your indicator, you first need to delineate the so called Definition area for your indicator, which is the total geographical range the indicator potentially may cover. Thereafter, the actual areas from which you have measurements are defined within the definition area.

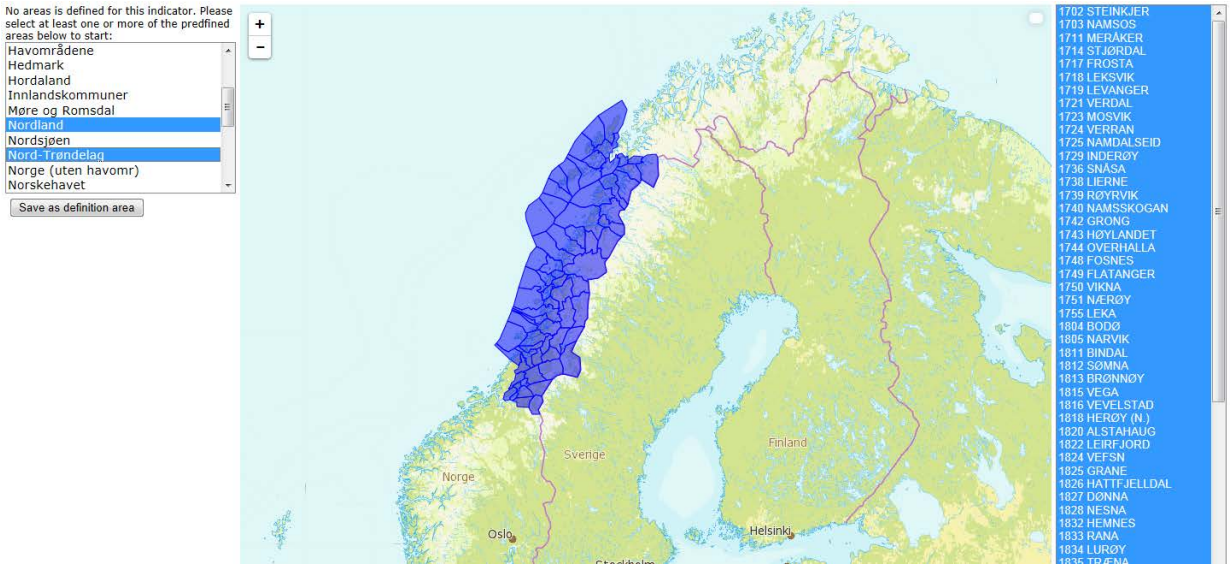
You will not be able to delineate areas outside the Definition area. However, the Definition area may be expanded (or reduced) if necessary.



Delineate the definition area for the first time

Before a Definition area is delineated for you indicator, the map and municipality list is empty, while on the left there is one drop-down list of predefined areas you may choose for you indicator.

Choose the predefined area from the list that best corresponds to the indicator's definition area. If you want to merge some of the predefined areas, press the Ctrl-key while choosing additional areas in the list. The resulting definition area is then displayed on the map and the municipality list will contain all municipalities in the definition area.

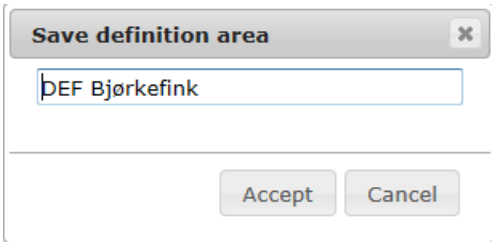


Optionally you may remove some municipalities from the candidate definition area before saving either by clicking on those municipalities in the map or by clicking on their names in the municipality

list while pressing the Ctrl-key. (If you want to add single municipalities you may proceed by first saving the candidate definition area and thereafter expand it as described below.)

Click the Save as definition area button.

In the pop-up window rename the definition area if desired.



Click Accept.

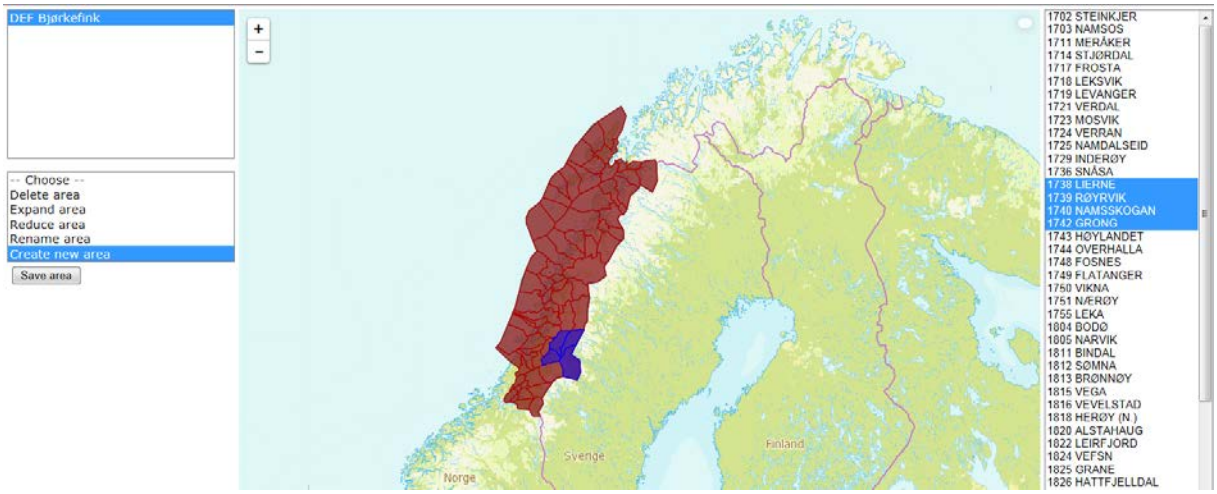
After saving the operation list appears on the left side of the map.

Create a new area (within the Definition area)

Choose Create new area in the operation list.

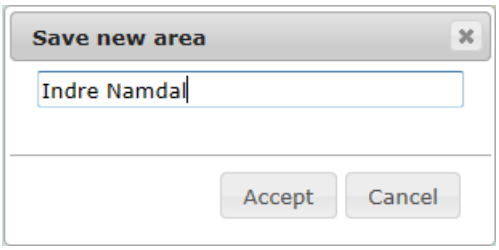
Available municipalities (i.e. municipalities within the Definition area that is not included in another area in the area list) are then displayed on the map and listed on the right.

Select municipalities to be included in the new area from the map or from the municipality list.



Click the Save area button.

In the pop-up window rename the area if desired.



Click Accept.

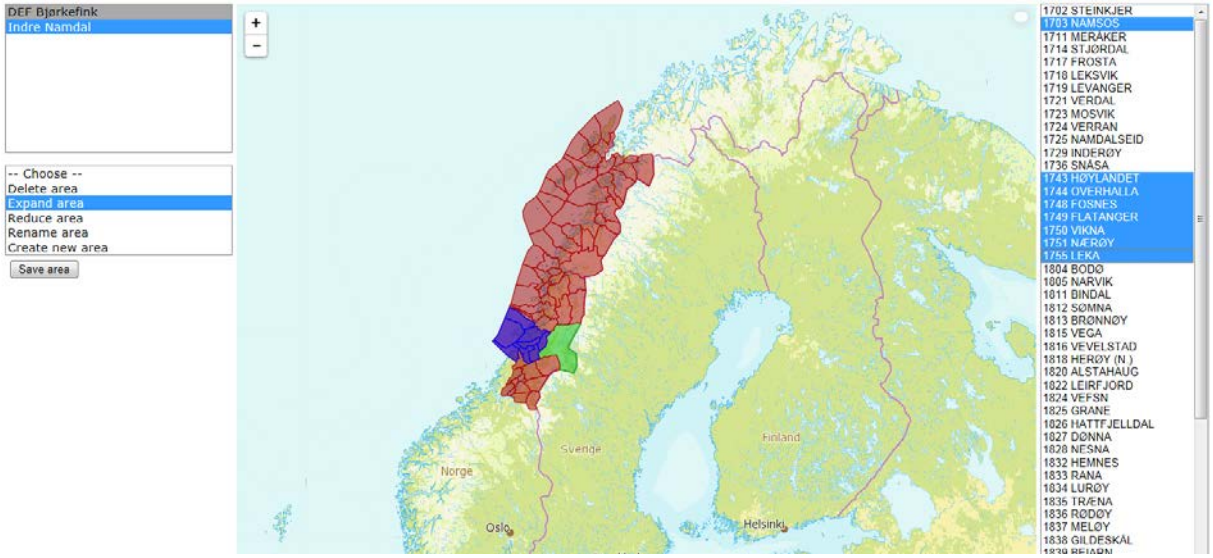
Expand an area

Choose the area to be expanded from the area list.

Choose Expand area in the operation list.

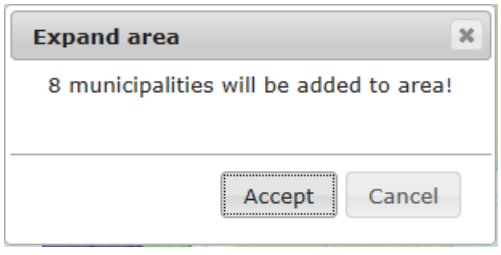
Available municipalities (i.e. municipalities within the definition area that is not included in another area in the area list) are then displayed on the map and listed on the right. (If you expand the definition area all oceanic regions/municipalities outside the definition area are displayed and listed.)

Select municipalities to be included in the expanded area from the map or from the municipality list.



Click the Save area button.

Click Accept in the pop-up window.



Indicator data that are already stored for this area will automatically be linked to all municipalities in the expanded area.

Reduce an area

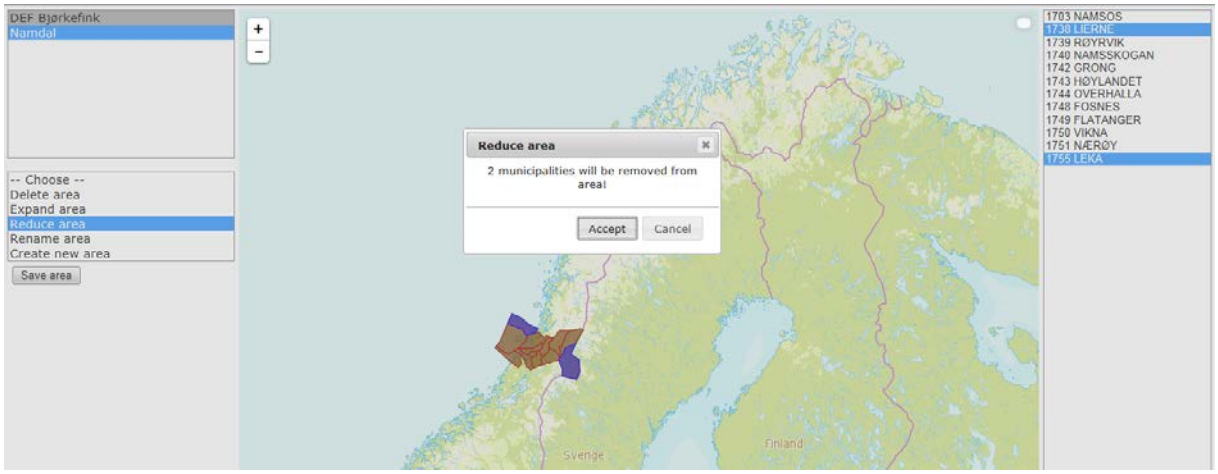
Choose the area to be reduced from the area list.

Choose Reduce area in the operation list.

Municipalities included in the area are then displayed on the map and listed on the right.

Select municipalities to be removed from the map or from the municipality list.

Click the Save area button.



Click Accept in the pop-up window.

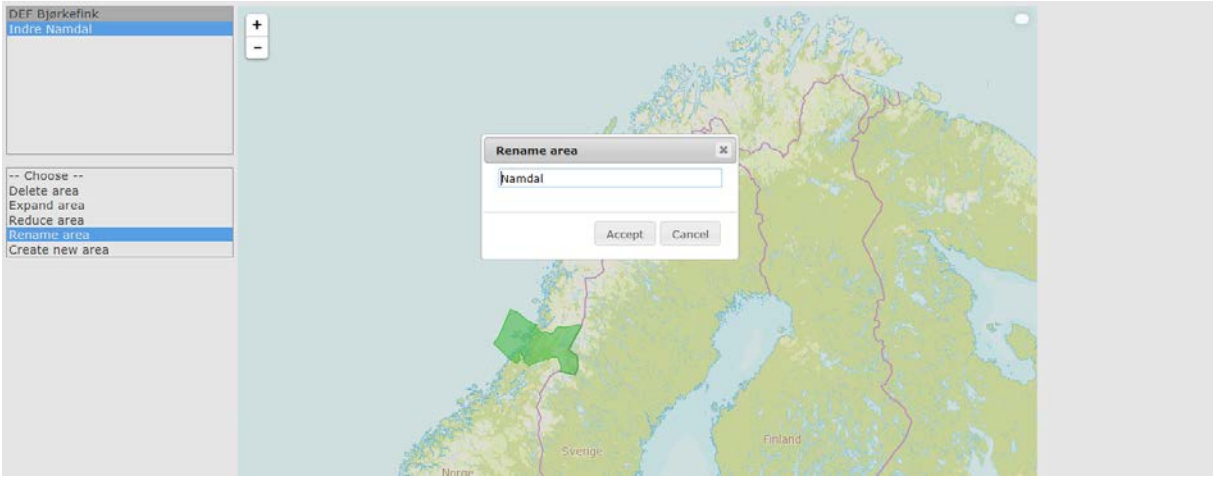
Indicator data that are already stored for this area will no longer be linked to removed municipalities.

Rename an area

Choose the area to be renamed from the area list.

Choose Rename area in the operation list.

Edit the name in the pop-up window.



Click Accept.

Delete an area

Choose the area to be deleted from the area list.

Choose Delete area in the operation list.

Click Accept in the pop-up window.

Warning! Deleting an area causes all observation data from this area to be deleted from the database.

Warning! Deleting the definition area causes all areas and observation data for the indicator to be deleted from the database.

Merge two areas

You may want to merge two areas if you want data for “area 1” to be valid also for “area 2”.

Delete “area 2” (see above).

Expand “area 1” with municipalities previously in “area 2” (see above).

This causes old data for “area 2” to be deleted from the database, while data for “area 1” now also are linked to municipalities formerly in “area2”.

Split one area into two

You may want to split one area into two if you have new data that only applies to parts of a formerly delineated area.

Reduce the former area by removing municipalities that have new data.

Create a new area by selecting those municipalities you removed.

Values page

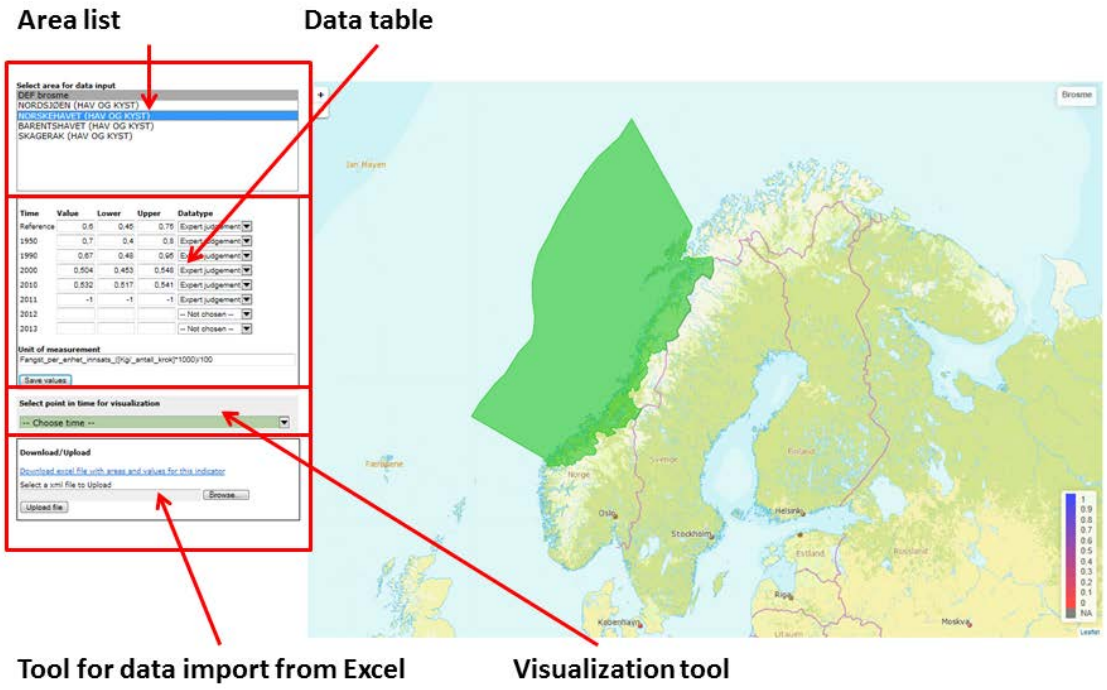
To access the page choose one of your indicators on the **Indicator** page. Then click the **Values** tab.

Content

Values page contains tools for entering indicator values to the database either directly on the page or by importing the data from Excel work-sheets. There is also a proofreading tool that visualizes stored data on a map.

The left side of the page contains a list of delineated areas for the chosen indicator, the drop-down list for selecting observation year to be visualized, and the tool for importing data. The rest of the page contains a map for visualization.

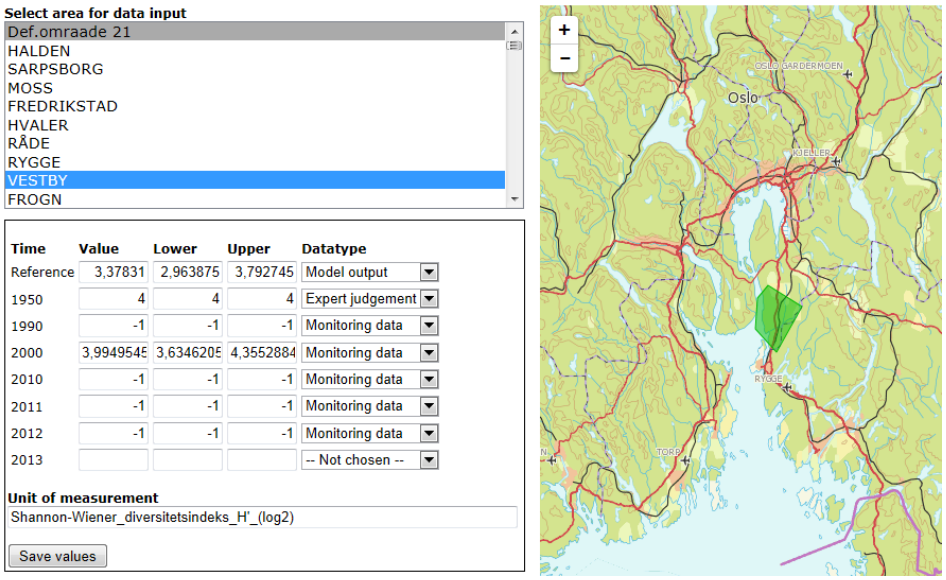
When you select an area in the area list an additional data table for displaying, entering, and editing the numeric data for this area will appear below the list. The table consists of 5 columns; Time, Value, Lower, Upper, Datatype, one row for reference values and one row for each observation year. Below the table is a text field that contains the measurement unit used to scale the numeric values in the table.



Enter or edit indicator measurements directly on the Values page

Choose area for which you will enter values from the area list.

The area is shown on the map and the data table appears below the area list. Data already stored in the data base for this area are displayed in the table. Table elements where no data have been entered and stored earlier appear empty.



Enter or edit numeric values in the table. I.e. for new reference values and all years with new data, provide expected values as well as lower and upper quartiles and choose data type from drop-down list.

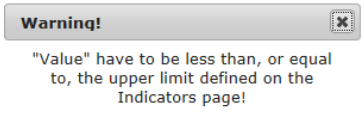
Enter -1 (missing value) in the Value cell if the indicator is not measured in the area for a particular year. You may leave Lower and Upper empty in this case. After saving values these two cells will remain empty regardless of whether data have been entered there or not.

Control that the same unit of measurement is used to scale all numeric fields in the table, i.e. reference values and values as well as expected values and quartiles.

Enter (if not entered earlier) or edit (if not correct) unit of measurement in the text field below the table.

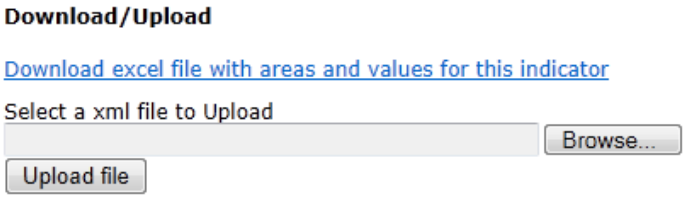
Click the Save values button in order to save new or edited data in the database. If you forget to click the button new or edited data will be lost when you leave the **Values** page or choose another area from the area-list.

If you have provided limits for indicator values on the **Indicators** page, your input will be checked against these before values are stored. If some values are outside these limits, new or edited data will not be stored. Instead a warning message is displayed.

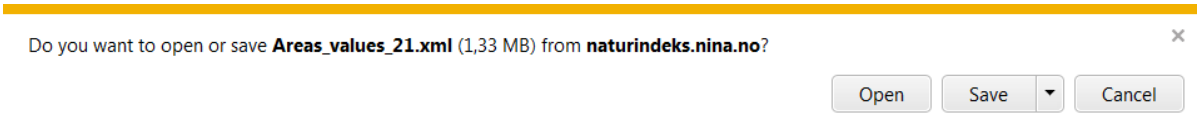


Import data from Excel

Click the Download excel file with areas and values for this indicator link.


Download/Upload
Download excel file with areas and values for this indicator
Select a xml file to Upload
Browse...
Upload file

Choose Open or one of the alternatives from the Save menu in the pop up window.



This creates an xml-file that you open in Excel. The file has 11 columns with data (Area ID and name, Indicator ID and name, Time ID and name (text), Expected value, Lower and Upper Quartiles, Data type and unit of measurement) and 8 rows for each area. One example is shown below where there are two areas defined for the indicator. The Datatype column uses codes for the different data types, 1 stands for Expert judgment, 2 for Monitoring data and 3 for Model output.

	A	B	C	D	E	F	G	H	I	J	K
1	Area_ID	Area Name	Indicator_ID	Indicator Name	Time_ID	Time Text	Value	Lower	Upper	Datatype	Unit of measuremer
2	1456	NORSKEHAVET	16	Blåkveite	0	Reference	25	25	25	1	Relativ gytebiomass
3	1456	NORSKEHAVET	16	Blåkveite	1	1950	25	19	31	1	Relativ gytebiomass
4	1456	NORSKEHAVET	16	Blåkveite	2	1990	7	5	9	3	Relativ gytebiomass
5	1456	NORSKEHAVET	16	Blåkveite	3	2000	8	6	10	3	Relativ gytebiomass
6	1456	NORSKEHAVET	16	Blåkveite	4	2010	13	19	31	1	Relativ gytebiomass
7	1456	NORSKEHAVET	16	Blåkveite	5	2011	19	13	31	1	Relativ gytebiomass
8	1456	NORSKEHAVET	16	Blåkveite	6	2012	21	14	32	1	Relativ gytebiomass
9	1456	NORSKEHAVET	16	Blåkveite	7	2013					Relativ gytebiomass
10	1457	BARENTSHAVET	16	Blåkveite	0	Reference	450	450	450	1	1000 tonn per kvadr
11	1457	BARENTSHAVET	16	Blåkveite	1	1950	-1	-1	-1	1	1000 tonn per kvadr
12	1457	BARENTSHAVET	16	Blåkveite	2	1990	84,5	82,1	89,4	3	1000 tonn per kvadr
13	1457	BARENTSHAVET	16	Blåkveite	3	2000	95,8	92,5	102,4	3	1000 tonn per kvadr
14	1457	BARENTSHAVET	16	Blåkveite	4	2010	244,5	222,9	287,8	3	1000 tonn per kvadr
15	1457	BARENTSHAVET	16	Blåkveite	5	2011	208,8	169,3	287,8	3	1000 tonn per kvadr
16	1457	BARENTSHAVET	16	Blåkveite	6	2012	230,9	198,4	296	3	1000 tonn per kvadr
17	1457	BARENTSHAVET	16	Blåkveite	7	2013					1000 tonn per kvadr
18											

Enter new data in the empty cells and/or edit old data. **Do not perform any operation that will change the format or structure of the spread-sheet or the format of the cells.** This will disrupt the routine for importing the data back into the nature index database and most likely cause it to fail or malfunction.

Close the xml-file.

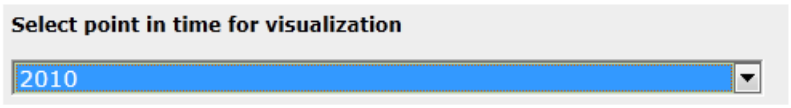
In the **Values** page click the Browse button which gives you access to the folders on your computer.

Find and open the xml-file in question.

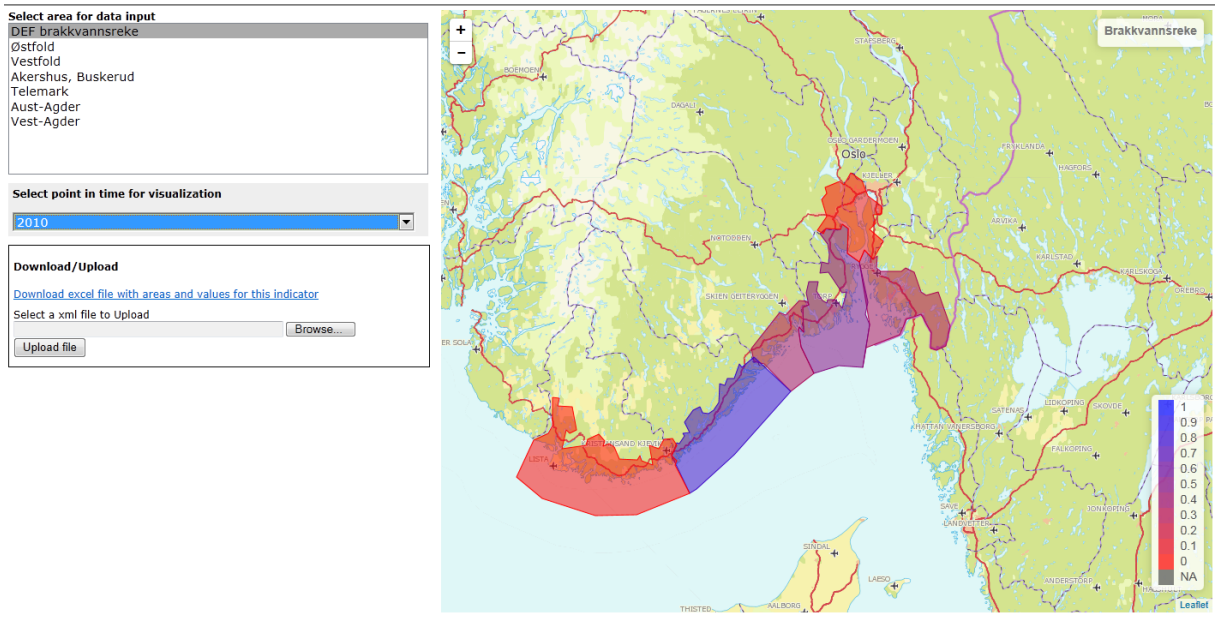
Click the Upload file button in the **Values** page to upload the file and store new and edited data in the database.

Visualize stored data

Select a year from the drop-down list Select point in time for visualization.



Scaled indicator values for all areas that year will then be displayed on the map according to the color code shown in the lower right corner.



Further, if you point at one of the areas on the map, the name of the area will appear in the upper right corner of the map together with the reference value as well as the scaled expected value. The content is constantly updated as you move the pointer to new areas.

Reference values

Reference values and how to determine them is explained in a separate document.

Values

Indicator values are measured/observed with uncertainty. Such uncertainty may arise for a number of reasons, e.g. because indicator values are calculated from a sample of observations, because of measurements errors, because model generated values are from models where parameters are estimated with error, because expert judgments are uncertain etc.

Values are therefore represented by probability distributions in the nature index framework, where the location of the distribution represents the value's magnitude and uncertainty is represented by the dispersion of the distribution. The framework uses expected value as location parameter and interquartile range as dispersion measure.

The generation of such a distribution is a two-step process. In the first step experts provide estimates of expected values and lower and upper quartiles on the **Values** page. These are stored in the database. In step two these are replaced by a probability distribution. For continuous indicators this is the distribution, chosen among normal-, truncated normal-, lognormal-, Weibull-, Gumbell- and gamma distributions that best fits the parameters provided by the experts. For discrete distributions, the set of candidate distributions spans Poisson-, negative binomial-, and zero-inflated Poisson distributions.

Expected value

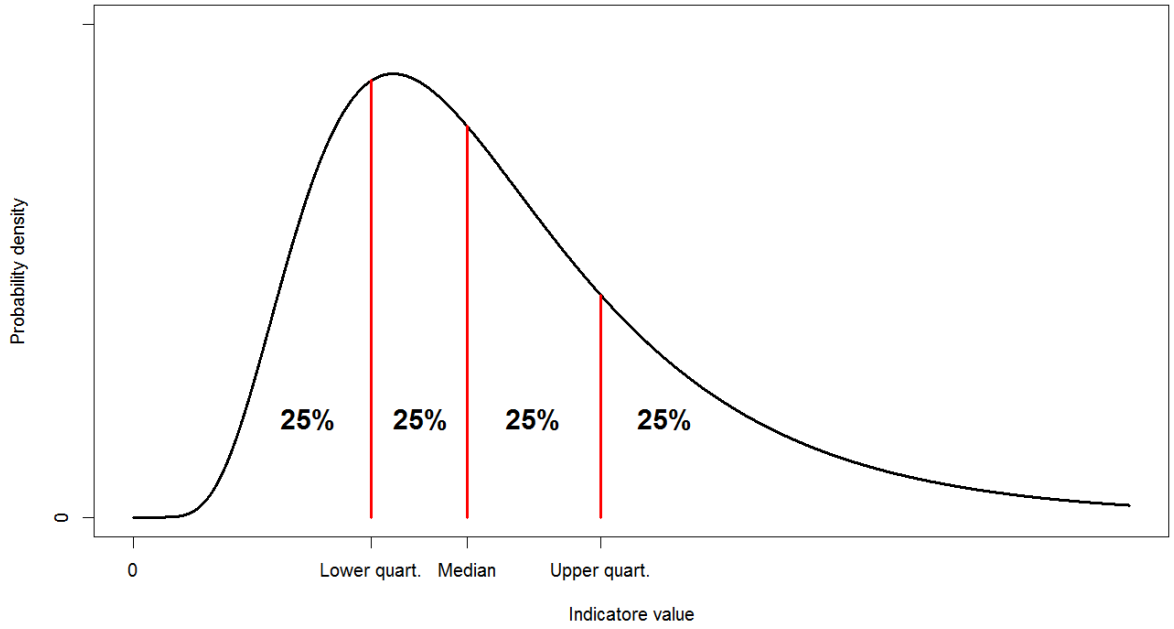
The expected value is the "average value" of a probability distribution. More formally, it is the average of an infinite sample of random draws from the distribution. Informally, in the present context, one may think of the expected value as the "best estimate" for the "true" indicator value.

Expected value should be entered in the Value column of the data table.

Quartiles

The quartiles of a probability distribution are the set of three numbers that partition the domain of possible indicator values into four equally probable intervals.

The lower and higher quartiles define the range that would contain half of the values obtained if repeated sampling was carried out. To put is simply, there is a 50% chance that the "true" indicator value lies within this range. Note however, that there both is a 25% chance that the "true" value is smaller than the lower quartile and a 25% chance that it is larger than the upper quartile. The distance between the upper and lower quartiles is called the Inter-quartile range. Inter-quartile range is one of several statistics that measures the dispersion of a probability distribution. It should not be confused with confidence intervals that are usually much broader (the range of confidence intervals usually spans 95% of the possible values).



The upper quartile should be entered in the Upper column of the data table, the lower quartile in the Lower column. The middle quartile, most often called the median, is not used in the current framework.

Unit of measurement

The same unit of measurement must be used for all numeric values referring to the same area, i.e. reference values and values as well as their expected values and quartiles.

However, unit of measurement may vary among areas defined for the same indicator.

Data type

This field is used to characterize the information source from which values are entered. There are three types recognized in the nature index framework:

Expert judgment
Monitoring data
Model output